

Claims

Sub A7
SUB B8

1. Apparatus for degassing plastic materials, in particular high-molecular polycarbonate solutions, having a double-shaft extruder, which comprises shafts rotating in the same direction and meshing with one another, characterized in that the extruder has a length-to-diameter ratio less than/equal to 40, wherein the shafts are designed with a double lead in the degassing zone of the extruder and with a triple lead in the pressure build-up zone of the extruder.

10 2. Apparatus according to claim 1, characterized in that the length-to-diameter ratio is in the region of 35 to 40.

15 3. Apparatus according to claim 1 or 2, characterized in that the extruder further comprises a cooling device defining a cooling zone.

4. Apparatus according to claim 3, characterized in that the shafts are designed with a triple lead in the cooling zone.

20 5. Apparatus according to one of the preceding claims, characterized in that kneading elements are disposed immediately downstream of the intake opening (2) of the extruder between the feed elements of the shafts.

6. Apparatus according to one of the preceding claims, characterized in that the extruder in feed direction comprises a plurality of degassing zones, to each of 25 which an exhausting device is connected.

7. Apparatus according to one of the preceding claims, characterized in that the shafts have a triple-lead profile in the region between two degassing zones.

30 8. Apparatus according to one of the preceding claims, characterized in that the extruder comprises an entraining agent inlet (11) disposed between two degassing zones.

35 9. Apparatus according to claim 8, characterized in that the extruder in feed direction comprises three degassing zones, wherein the entraining agent inlet (11) is disposed between the second and the third degassing zone.

10. Apparatus according to one of the preceding claims, characterized in that disposed upstream of the intake opening (2) of the extruder is a vent opening (3) used for backward degassing.

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11. Apparatus according to one of the preceding claims, characterized in that disposed downstream of the - in feed direction - last degassing zone is a charging device (15) for admixing additives.

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12. Process for degassing plastic materials, in particular high-molecular polycarbonate solutions, by means of a double-shaft extruder, which comprises shafts rotating in the same direction and meshing with one another, characterized in that the shafts are designed with a double lead in the degassing zone of the extruder and with a triple lead in the pressure build-up zone of the extruder and the extruder has a length-to-diameter ratio smaller than/equal to 40.

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13. Process according to claim 12, characterized in that the length-to-diameter ratio is in the region of 35 to 40.

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14. Process according to claim 12 or 13, characterized in that the plastic material is cooled.

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15. Process according to claim 14, characterized in that the shafts are designed with a triple lead in the region of the cooling zone.

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16. Process according to one of claims 12 to 15, characterized in that the degassing of the plastic material is effected in the form of forward degassing or a combination of forward and backward degassing, wherein the forward degassing is effected in a plurality of stages and volatile components of the plastic material are removed in each degassing stage by means of an exhausting device.

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17. Process according to one of claims 12 to 16, characterized in that the extruder in feed direction comprises three degassing zones, wherein there is generated at the vent opening (5) associated with the first degassing zone an absolute pressure in the region of 0.5 to 1.5 bar, at the vent opening (9) associated with

the second degassing zone an absolute pressure in the region of 0.03 to 1.9 bar and at the vent opening (10) associated with the third degassing zone an absolute pressure in the region of 0.001 to 0.03 bar.

5 18. Process according to one of claims 12 to 17, characterized in that an entraining agent is admixed with the plastic material.

10 19. Process according to claims 18 and 19, characterized in that the entraining agent is admixed in feed direction between the second and the third degassing zone.

15 20. Process according to claim 18 or 19, characterized in that nitrogen is used as an entraining agent.

20 21. Process according to claim 20, characterized in that the extruder is operated at a rotational speed lower than/equal to 390 rpm and the volume rate of flow of the supplied nitrogen is 2 to 10 Nm³/h.

20 22. Process according to one of claims 12 to 21, characterized in that the - in feed direction - last degassing zone is adjoined by a pressure build-up zone.

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